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EXAMINER	
LE,Q	
ART UNIT	**PAPER NUMBER**
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KENYON & KENYON
1025 CONNECTICUT AVENUE N W
SUITE 600
WASHINGTON DC 20036

DATE MAILED: 12/28/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined. ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire THREE (3) month(s), --- days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☒ Notice re Patent Drawing, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of informal Patent Application, Form PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☒ Claim(s) 1-31 are pending in the application.
   Of the above, claim(s) _____ is withdrawn from consideration.
2. ☐ Claim(s) _____ has been canceled.
3. ☐ Claim(s) _____ is allowed.
4. ☒ Claim(s) 1-31 are rejected.
5. ☐ Claim(s) _____ is objected to.
6. ☐ Claim(s) _____ are subject to restriction or election requirement.
7. ☒ This application has been filed with informal drawing(s) under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawing(s) are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction(s), filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☒ Acknowledgment is made of the claim for priority under 35 USC 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. _____ ; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The disclosure is objected to because of the following informalities: In specification, page 6, line 28, "Figure 3 is a schematic diagram" should be changed to "Figures 3A-3D are schematic diagrams".

Appropriate correction is required.

Claims 1-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 7, term "low temperature" is indefinite. How and in what manner is level (low/high) of temperature determined? The citation appears to be a method step or an intended use statement. Similar statement in claims 14, 19 and 31 is similarly indefinite and unclear.

Claims 2-13, 15-18 and 20-30 are indefinite because they include the indefiniteness of the claims on which they depend.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 14-16, 19-21 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Cox et al 5,043,582 or Shapiro et al 5,619,040.

Cox et al and Shapiro et al disclose an imaging system comprising: a semiconductor substrate (301,14); an array of detector cells (304,12); an array of readout cells (302,30,32); and a plurality of low temperature solder bumps for connecting the detector cells to the readout cells. The described system inherently perform the method steps of claims 19-21 and 31.

Claims 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Cox et al 5,043,582.

As per the discussion above, Cox et al further disclose a plurality of analog to digital converters and data reduction processors (switches and multiplexers).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the

subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-13 and 22-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al 5,043,582 or Shapiro et al 5,619,040.

With respect to claims 2-4, as per the above discussion, although Cox et al and Shapiro et al fail to specify the degree for melting point of the solder bumps, selecting a particular known material forming element or component in a semiconductor structure would have been obvious to one of ordinary skill in the art, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Thus, it would have been obvious to modify Cox et al or Shapiro et al accordingly in order to provide a desired structure for the system.

With respect to claims 5-13, as per the discussion of claims 1, 14-16, 19-21 and 31 above, although Cox et al and Shapiro et al lack a clear teaching of chemical components of the solder bumps, the selection of known material and percentage of chemical components for solder bumps as claimed would have been obvious to one of ordinary skill in the semiconductor art, hence the modification of Cox et al or Shapiro et al system, accordingly, would have been obvious for similar reasons set forth above.

The proposed system discussed above inherently perform the method steps of claims 22-30.

Any inquiry concerning this communication should be directed to Examiner Le at telephone number (703) 308-4830.

Que T. Le
Primary Examiner